

**REMARKS**

Entry of the foregoing, reexamination and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.111 and in light of the remarks which follow, are respectfully requested.

At the outset, Applicants thank Examiner Barry of the U.S. Patent and Trademark Office for his time and consideration in participating in telephonic interviews with Applicants' representative on April 22-24, 2003. At the conclusion of the interviews, it was agreed that a new Official Action would be issued. The present paper is filed in response to the outstanding Official Action.

By the above amendments, the specification has been amended to include a description of newly added Figure 5. Support for this amendment can be found in original claim 4. Claim 1 has been canceled without prejudice or disclaimer. Claims 2-18 have been amended in conformance with standard U.S. claims drafting practice by replacing the phrase "characterised in that" with "wherein." Claim 4 has been amended for readability purposes to recite that the double water/oil/water emulsion comprises a continuous aqueous phase in which an oily phase is dispersed, and a second aqueous phase dispersed in the oily phase.

Claim 7 has been amended to delete the phrase "selected preferably from chlorides, nitrates, sulfates and acetates," and new claim 21 is directed to the deleted subject matter. Claim 9 has been amended to delete the phrase "in particular between 0.49 and 1.8 moles," and new claim 22 is directed to the deleted subject matter. Claim 10 has been amended for readability purposes by replacing " $1.10^6$ " with " $1 \cdot 10^6$ ." Claim 14 has been amended for readability purposes by deleting "the" prior to the word "copolymers." Claim 14 has also been amended to delete the

phrase "preferably chloride," and new claim 23 is directed to the deleted subject matter. Claim 15 has been amended to delete the phrase "preferably between 0.3% and 8%," and new claim 24 is directed to the deleted subject matter.

Claim 16 has been amended for readability and clarification purposes by replacing the phrase "of the order of  $3 \cdot 10^6$ -" with "on the order of  $3 \cdot 10^6$ ." Claim 17 has been amended for readability purposes by replacing " $1 \cdot 10^2$  and  $8 \cdot 10^6$ " with " $1 \cdot 10^2$  and  $8 \cdot 10^6$ ." Claim 17 has also been amended to delete the phrase "in particular between  $1 \cdot 10^3$  and  $8 \cdot 10^6$ ," and new claim 25 is directed to the deleted subject matter. Claim 18 has been amended for readability purposes by deleting the comma after "polyelectrolyte" and by adding the word "is." Claim 18 has also been amended to delete the phrase "more particularly between 0.1 and 10," and new claim 26 is directed to the deleted subject matter.

Claims 19 and 20 have been amended for readability purposes, as well as in conformance with standard U.S. claims drafting practice to be directed to methods of using a composition. Claim 19 has been amended for clarification purposes by reciting that the method comprises contacting the composition with the aqueous medium. Claim 19 has also been amended to delete the phrase "in particular waste, urban or industrial water," and new claim 27 is directed to the deleted subject matter. Claim 20 has been amended for clarification purposes by reciting that the method comprises contacting the composition with the biological sludge. In addition, claim 20 has been amended to delete the phrase "sludges from the purification of dirty or waste water, for the purposes of dehydration thereof," and new claim 28 is directed to the deleted subject matter.

New claim 29 is directed to subject matter of original claim 1, wherein the at least one invert emulsion containing at least one cationic polyelectrolyte is mixed with an aqueous solution. New claim 30 is directed to subject matter of original claims 1 and 3, wherein the at least one invert emulsion containing at least one cationic polyelectrolyte is mixed with an invert emulsion. Claims 3-5, 7-17, 19 and 20 have been amended to remove multiple dependencies therefrom and to depend from new claim 29.

In the Official Action, the drawings stand objected for failing to illustrate the recited "double water/oil/water emulsion." Without addressing the propriety of the Patent Office's comments in connection with this objection, attached hereto is a new Figure 5 which illustrates an exemplary embodiment of a "double water/oil/water emulsion." Support for the new figure can be found in original claim 4. For at least the above reasons, withdrawal of the drawing objection is respectfully requested.<sup>1</sup>

Claims 5-20 stand objected to under 37 C.F.R. §1.75(c) for containing improper multiple claim dependencies. This objection has been obviated by the above amendments in which multiple claim dependencies have been removed. Accordingly, withdrawal of the objection is respectfully requested.

Claim 4 stands rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth at pages 3 and 4 of the Official Action. Withdrawal of this rejection is respectfully requested for at least the following reasons.

It is clear from original claim 4 that the "double water/oil/water emulsion" includes (1)

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<sup>1</sup>New formal drawings have been submitted in response to the Notice of Draftsperson's Patent Drawing Review issued with the Official Action.

a continuous aqueous phase in which the mineral cation is present; (2) an oily phase; and (3) a second aqueous phase constituted of water droplets in which the cationic polyelectrolyte is distributed at least in part, wherein the second aqueous phase is dispersed in the oily phase (see FIG. 5). Thus, the meaning of the term "double water/oil/water emulsion" is clear. Claim 4 has been amended for readability purposes to further clarify the meaning of such term.

With regard to the objected-to phrase "at the level of," such phrase has been deleted in an effort to expedite prosecution.

Accordingly, for at least the above reasons, withdrawal of the §112, second paragraph, rejection is respectfully requested.

Claims 1 and 2 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,830,388 (*Kigel et al*). The above rejection is moot with respect to claim 1 in light of the cancellation thereof. In addition, the rejection is inapplicable to new claim 30 because new claim incorporates the features of claim 3, which has not been rejected in the present rejection. Withdrawal of the rejection as applied to claim 2 and new claim 29 is respectfully requested for at least the following reasons.

According to one aspect of the present invention as defined by claim 2, a composition useful for conditioning sludge is provided. The composition is in the form of an emulsion comprising in aqueous phase or phases and separately at least one mineral cation of a charge of greater than or equal to 2 and a cationic polyelectrolyte.

*Kigel et al* relates to a coagulating or flocculating agent and also a method for making same (col. 4, line 65 to col. 5, line 4).

*Kigel et al* does not constitute an anticipation of an aspect of the present invention as defined by claim 2. For example, *Kigel et al* fails to disclose a composition in the form of an emulsion. In this regard, *Kigel et al* discloses forming a concentrated aluminum pentahydroxychloride in the form of a liquid concentrate or a solid material which further can be ground to a powder, and then admixing the liquid concentrate or solid material with a flocculating-enhancing additive (FEA), preferably powdered zeolite (col. 6, lines 15-21). There is simply no inherent or explicit disclosure that the material resulting from the above process steps disclosed by *Kigel et al* is a composition in the form of an emulsion.

Furthermore, *Kigel et al* fails to disclose an emulsion comprising in aqueous phase or phases and separately at least one mineral cation of a charge of greater than or equal to 2 and a cationic polyelectrolyte, as recited in claim 2. By comparison, as discussed above, *Kigel et al* merely discloses admixing a liquid concentrate or a solid material with an FEA, preferably a powdered zeolite. Clearly, there is no disclosure that the material resulting from such admixing step is an emulsion comprising separately at least one mineral cation of a charge of greater than or equal to 2 and a cationic polyelectrolyte, as recited in claim 2.

Accordingly, for at least the reasons discussed above, it is apparent that *Kigel et al* fails to anticipate one aspect of the present invention as defined by claim 2.

According to another aspect of the present invention as defined by claim 29, a composition useful for conditioning sludge is provided. The composition is obtained by mixing at least one invert emulsion containing at least one cationic polyelectrolyte with an aqueous solution containing at least one mineral cation with a charge of greater than or equal to 2.

*Kigel et al* does not constitute an anticipation of an aspect of the present invention as defined by claim 29. For example, *Kigel et al* fails to disclose a composition obtained by mixing at least one invert emulsion containing at least one cationic polyelectrolyte with an aqueous solution containing at least one mineral cation with a charge of greater than or equal to 2. As discussed above, *Kigel et al* discloses admixing a concentrated aluminum pentahydroxychloride in the form of a liquid concentrate or a solid material, with a FEA, preferably a powdered zeolite. There is simply no inherent or explicit disclosure that the material resulting from such admixture is the same as the claimed composition.

For at least the above reasons, it is apparent that *Kigel et al* does not constitute an anticipation of the presently claimed invention. Accordingly, withdrawal of the §102(b) rejection is respectfully requested.

Claims 1 and 3/1 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,763,530 (*Chen et al*). This rejection is moot in light of the cancellation of claim 1, and the amendment of claim 3 to depend from claim 29. Withdrawal of the rejection as applied to new claims 29 and 30 is respectfully requested for at least the following reasons.

*Chen et al* relates to a stable composition comprising a blend of at least two inverse (water-in-oil) emulsions (col. 3, lines 25-33).

*Chen et al* does not constitute an anticipation of an aspect of the present invention as defined by claim 29. For example, *Chen et al* does not disclose a composition obtained by mixing at least one invert emulsion containing at least one cationic polyelectrolyte with an aqueous solution containing at least one mineral cation with a charge of greater than or equal to

2. In stark contrast with the composition of claim 29, *Chen et al* discloses a blend of two inverse emulsions, which clearly is not the same as the composition of claim 29.

It is noted that *Chen et al* discloses that the quaternized Mannich PAM microemulsion can be heat treated before being blended with the second emulsion (col. 14, lines 31-33). *Chen et al* also discloses that the heat treatment is performed by, *inter alia*, adding to the untreated microemulsion, with agitation, an aqueous solution containing an acid (col. 14, lines 36-39). However, in stark contrast with the present invention, the microemulsion of *Chen et al* is not inverted when the aqueous solution containing the acid is added thereto. In this regard, *Chen et al* discloses that the microemulsion obtained after the heat treating will successfully invert when added to water (col. 15, lines 53-56). As such, it is clear that the material formed by adding the acid-containing aqueous solution to the quaternized Mannich PAM microemulsion as disclosed by *Chen et al*, does not result in the composition recited in claim 29.

*Chen et al* also fails to constitute an anticipation of one aspect of the present invention as defined by claim 30. For example, *Chen et al* does not disclose a composition in the form of an invert water-in-oil emulsion in which a mineral cation and a cationic polyelectrolyte are distributed in separate water droplets in the oily phase, as recited in claim 30. By comparison, *Chen et al* discloses that an inverse microemulsion which contains in its discontinuous phase a functionalized water-swellaable, preferably water-soluble polymer, is blended with a second inverse emulsion containing a water-swellaable, preferably, water-soluble (alk)acrylamide-based polymer and a blend stabilizing amount of an aldehyde scavenger (col. 3, lines 25-33). Clearly, *Chen et al* has no disclosure or recognition that in the blend thereof, a mineral cation and a cationic polyelectrolyte are distributed in separate water droplets in the oily phase.

For at least the above reasons, it is apparent that *Chen et al* does not constitute an anticipation of the presently claimed invention. Accordingly, withdrawal of the §102(b) rejection is respectfully requested.

Claim 2 stands rejected under 35 U.S.C. §102(b) as being anticipated by *Chen et al*. Withdrawal of this rejection is respectfully requested for at least the following reasons.

*Chen et al* fails to disclose each feature of one aspect of the present invention defined by claim 2. For example, *Chen et al* does not disclose a composition in the form of an emulsion comprising in aqueous phase or phases and separately at least one mineral cation of a charge of greater than or equal to 2 and a cationic polyelectrolyte. Rather, as discussed above, *Chen et al* merely discloses blending two inverse emulsions. *Chen et al* simply has no disclosure or recognition of a composition comprising separately at least one mineral cation of a charge of greater than or equal to 2 and a cationic polyelectrolyte.

Accordingly, for at least the above reasons, withdrawal of the §102(b) rejection is respectfully requested.

Claim 1 has been rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 4,606,913 (*Aronson et al*) in view of U.S. Patent No. 6,120,690 (*Haase*). This rejection is moot in light of the cancellation of claim 1. Withdrawal of this rejection as applied to new claims 29 and 30 is respectfully requested for at least the following reasons.

*Aronson et al* relates to a high-internal-phase emulsion having an increased stability obtained by the inclusion of an electrolyte in the emulsion (col. 5, lines 18-21).

*Aronson et al* does not disclose or suggest each feature of one aspect of the present invention as defined by claim 29. In this regard, the Patent Office has relied on *Aronson et al*



for disclosing an invert emulsion containing a cationic polyelectrolyte (Official Action at page 3). However, *Aronson et al* does not disclose or suggest a composition useful for conditioning sludge obtained by mixing at least one invert emulsion containing at least one cationic polyelectrolyte with an aqueous solution containing at least one mineral cation with a charge of greater than or equal to 2, as recited in claim 29.

*Haase* fails to cure the above-described deficiency of *Aronson et al*. In this regard, the Patent Office has relied on *Haase* for disclosing the addition of aluminum sulfate to a cationic polyelectrolyte composition to improve clarification of water (Official Action at page 3). The Patent Office has asserted that it would have been obvious to obtain the composition of claim 29 by mixing the cationic polyelectrolyte-containing emulsion disclosed by *Aronson et al* with the aluminum sulfate disclosed by *Haase*, because *Haase* discloses that such mixture would result in improving clarification of water. Applicants respectfully but strenuously disagree.

*Aronson et al* discloses that blending and mixing an ingredient to the already formed emulsion results in the formation of a non-emulsion phase containing such ingredient (col. 19, lines 15-20). Thus, it appears that the Patent Office's proposed modification of adding *Haase's* aluminum sulfate to *Aronson et al's* emulsion would result in the cationic polyelectrolyte being present in the emulsion, and the aluminum sulfate being present in a non-emulsion phase. That is, contrary to the Patent Office's assertion, the proposed modification would not result in adding the aluminum sulfate to the cationic polyelectrolyte. For at least this reason, one of ordinary skill in the art would not have been motivated to modify the *Aronson et al* emulsion by mixing the *Haase* aluminum sulfate therewith.

Moreover, the high-internal-phase emulsion disclosed by *Aronson et al* is a completely different material from the waste-containing water to which *Haase* discloses adding the aluminum sulfate. In light of such different materials, one of ordinary skill in the art would not have been motivated to add the aluminum sulfate disclosed by *Haase* to the high-internal-phase emulsion of *Aronson et al*.

Accordingly, it is apparent that *Aronson et al* and *Haase* do not render *prima facie* obvious one aspect of the present invention defined by claim 29.

Furthermore, *Aronson et al* and *Haase* fail to disclose or suggest a composition obtained by mixing at least one invert emulsion containing at least one cationic polyelectrolyte, with an invert emulsion containing at least one mineral cation with a charge of greater than or equal to 2, as recited in claim 30. In this regard, *Aronson et al* discloses the formation of a single emulsion, and has no recognition or suggestion of a composition obtained by mixing two invert emulsions. *Haase* also fails to disclose or suggest a composition obtained by mixing two invert emulsions. As such, it is clear that *Aronson et al* and *Haase* do not render obvious one aspect of the present invention as defined by claim 30.

For at least the above reasons, withdrawal of the §103(a) rejection based on *Aronson et al* and *Haase* is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

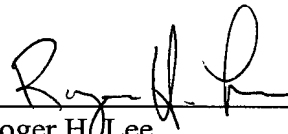
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If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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